



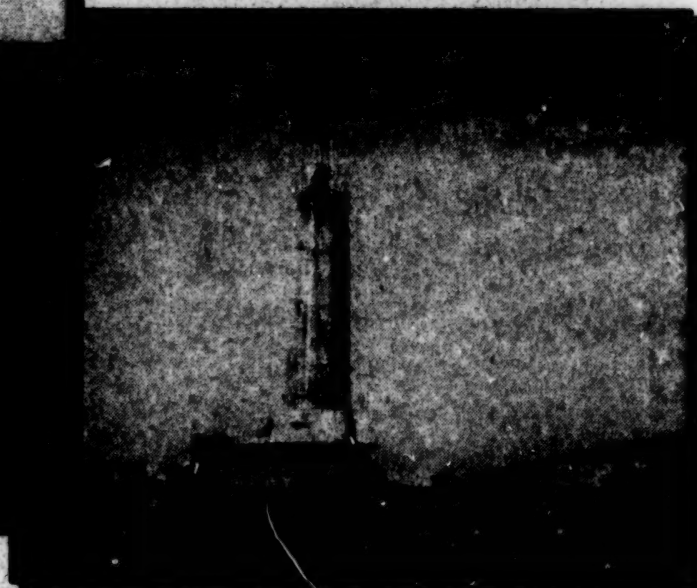
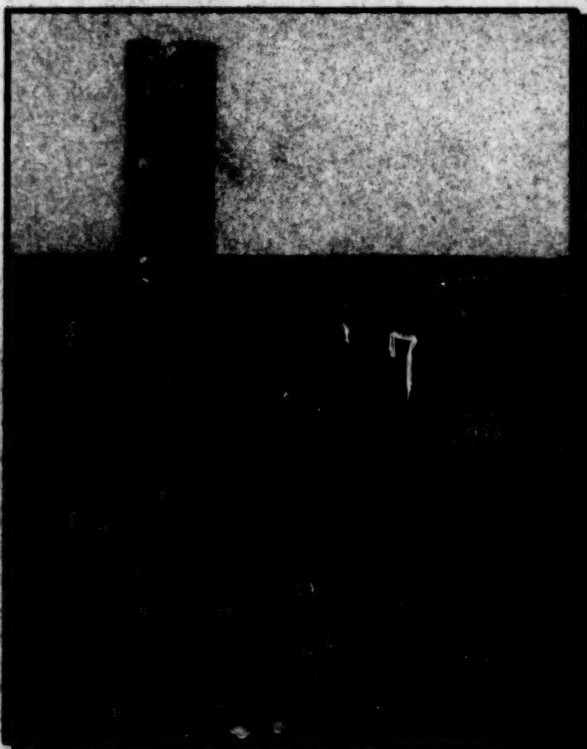
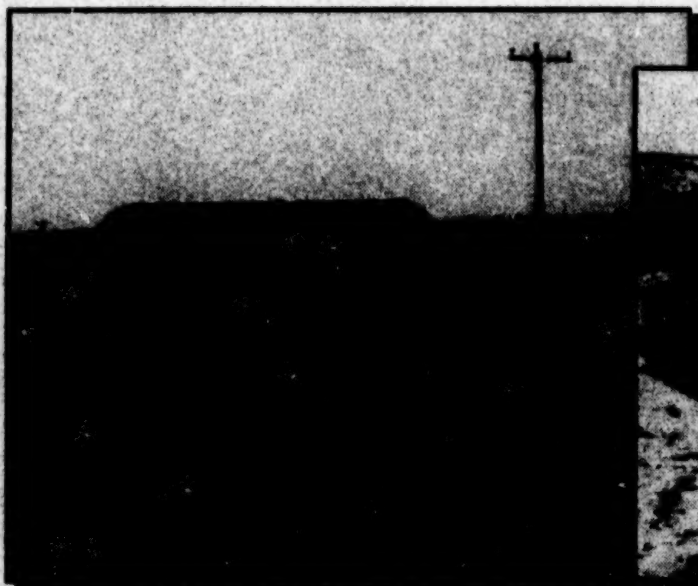
U.S. Department of the Interior

Bureau of Land Management
Rock Springs Field Office

August 1999



**Comparative Analysis Report,
Texaco Stagecoach Draw Unit,
Revised Proposed Action**



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**COMPARATIVE ANALYSIS REPORT,
TEXACO STAGECOACH DRAW UNIT,
REVISED PROPOSED ACTION**

**Bureau of Land Management
Rock Springs Field Office
Rock Springs, Wyoming**

This Comparative Analysis Report was prepared by TRC Mariah Associates Inc., an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with 40 C.F.R. 1506.5(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

August 1999

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION/PURPOSE AND NEED	1
2.0 COMPARISON OF THE REVISED PROPOSED ACTION WITH THE ORIGINAL PROPOSED ACTION AND ALTERNATIVE A	5
2.1 CONSTRUCTION AND DRILLING OPERATIONS	8
2.2 COMPLETION OPERATIONS	12
2.3 PRODUCTION OPERATIONS	12
2.4 PIPELINES	12
2.5 POWER LINES	14
2.6 COMPRESSOR STATION	14
2.7 CENTRAL GAS DEHYDRATION PLANT	14
2.8 CENTRAL AMINE TREATMENT FACILITY	15
2.9 RECLAMATION AND ABANDONMENT	15
2.9.1 Producing Well Locations	15
2.9.2 Access Roads	15
2.9.3 Pipeline Corridors	15
2.9.4 Final Abandonment of Facilities	16
2.10 WORK FORCE NEEDS	16
2.10.1 Construction Operations	16
2.10.2 Drilling Operations	16
2.10.3 Completion Personnel	16
2.10.4 Operation and Maintenance	16
2.10.5 Workovers	17
2.10.6 Abandonment	17
2.11 HAZARDOUS MATERIALS	17
2.12 APPLICANT-COMMITTED PRACTICES	17
2.12.1 Cultural Resources	17
2.12.2 Paleontological Resources	18
2.12.3 Special Status Plants	18
2.12.4 Raptors and Sage Grouse	18
2.12.5 Surface Disturbance	18
2.12.6 Seasonal Big Game Stipulations	18
2.12.7 Riparian/Wetlands Management	19
2.12.8 Threatened, Endangered, Candidate, and Special Status Species	19
2.12.9 Environmental Training Program	19
2.12.10 Poaching and Littering Policies	19
2.12.11 Firearms and Dogs	20
2.12.12 Transportation Requirements	20

TABLE OF CONTENTS (Continued)

	Page
3.0 AFFECTED ENVIRONMENT	21
3.1 AIR QUALITY	21
3.2 MINERAL RESOURCES	21
3.3 WATER RESOURCES	22
3.4 NOISE AND ODOR	22
3.5 VEGETATION RESOURCES	22
3.6 WILDLIFE AND FISHERIES	22
3.7 WILD HORSES	23
3.8 CULTURAL RESOURCES	23
3.9 SOCIOECONOMICS	24
3.10 ENVIRONMENTAL JUSTICE	24
3.11 TRANSPORTATION	24
 4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION/ MONITORING	 25
4.1 AIR QUALITY	25
4.1.1 Comparison of Impacts	25
4.1.2 Mitigation Measures	33
4.1.3 Unavoidable Adverse Impacts	33
4.1.4 Cumulative Impacts	33
4.2 TOPOGRAPHY/PHYSIOGRAPHY	34
4.2.1 Comparison of Impacts	34
4.2.2 Mitigation Measures	34
4.2.3 Unavoidable Adverse Impacts	34
4.2.4 Cumulative Impacts	35
4.3 MINERAL RESOURCES	35
4.3.1 Comparison of Impacts	35
4.3.2 Mitigation Measures	35
4.3.3 Unavoidable Adverse Impacts	35
4.3.4 Cumulative Impacts	36
4.4 GEOLOGIC HAZARDS	36
4.4.1 Comparison of Impacts	36
4.4.2 Mitigation Measures	36
4.4.3 Unavoidable Adverse Impacts	36
4.4.4 Cumulative Impacts	37
4.5 PALEONTOLOGICAL RESOURCES	37
4.5.1 Comparison of Impacts	37
4.5.2 Mitigation Measures	37
4.5.3 Unavoidable Adverse Impacts	37
4.5.4 Cumulative Impacts	38

TABLE OF CONTENTS (Continued)

	<u>Page</u>
4.6 SOILS	38
4.6.1 Comparison of Impacts	38
4.6.2 Mitigation Measures	38
4.6.3 Unavoidable Adverse Impacts	39
4.6.4 Cumulative Impacts	39
4.7 SURFACE AND GROUND WATER RESOURCES	39
4.7.1 Comparison of Impacts	39
4.7.2 Mitigation Measures	39
4.7.3 Unavoidable Adverse Impacts	40
4.7.4 Cumulative Impacts	40
4.8 NOISE AND ODOR	40
4.8.1 Comparison of Impacts	40
4.8.2 Mitigation Measures	40
4.8.3 Unavoidable Adverse Impacts	41
4.8.4 Cumulative Impacts	41
4.9 VEGETATION	41
4.9.1 Comparison of Impacts	41
4.9.2 Mitigation Measures	42
4.9.3 Unavoidable Adverse Impacts	42
4.9.4 Cumulative Impacts	42
4.10 WETLANDS AND RIPARIAN AREAS	42
4.10.1 Comparison of Impacts	42
4.10.2 Mitigation Measures	43
4.10.3 Unavoidable Adverse Impacts	43
4.10.4 Cumulative Impacts	43
4.11 WILDLIFE AND FISHERIES	43
4.11.1 Big Game/Other Animals	43
4.11.1.1 Comparison of Impacts	43
4.11.1.2 Mitigation Measures	45
4.11.1.3 Unavoidable Adverse Impacts	45
4.11.1.4 Cumulative Impacts	45
4.11.2 Birds	46
4.11.2.1 Comparison of Impacts	46
4.11.2.2 Mitigation Measures	47
4.11.2.3 Unavoidable Adverse Impacts	47
4.11.2.4 Cumulative Impacts	47
4.11.3 Amphibians and Reptiles	48
4.11.3.1 Comparison of Impacts	48
4.11.3.2 Mitigation Measures	48
4.11.3.3 Unavoidable Adverse Impacts	48
4.11.3.4 Cumulative Impacts	48

TABLE OF CONTENTS (Continued)

	<u>Page</u>
4.11.4 Fisheries	49
4.11.4.1 Comparison of Impacts	49
4.11.4.2 Mitigation Measures	49
4.11.4.3 Unavoidable Adverse Impacts	49
4.11.4.4 Cumulative Impacts	50
4.12 THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES	50
4.12.1 Comparison of Impacts	50
4.12.2 Mitigation Measures	50
4.12.3 Unavoidable Adverse Impacts	52
4.12.4 Cumulative Impacts	52
4.13 WILD HORSES	53
4.13.1 Comparison of Impacts	53
4.13.2 Mitigation Measures	53
4.13.3 Unavoidable Adverse Impacts	53
4.13.4 Cumulative Impacts	53
4.14 CULTURAL RESOURCES	54
4.14.1 Comparison of Impacts	54
4.14.2 Mitigation Measures	54
4.14.3 Unavoidable Adverse Impacts	55
4.14.4 Cumulative Impacts	55
4.15 SOCIOECONOMICS	55
4.15.1 Comparison of Impacts	55
4.15.2 Mitigation Measures	56
4.15.3 Unavoidable Adverse Impacts	56
4.15.4 Cumulative Impacts	56
4.16 LAND STATUS/USE	56
4.16.1 Comparison of Impacts	56
4.16.2 Mitigation Measures	57
4.16.3 Unavoidable Adverse Impacts	57
4.16.4 Cumulative Impacts	57
4.17 RECREATION	57
4.17.1 Comparison of Impacts	57
4.17.2 Mitigation Measures	58
4.17.3 Unavoidable Adverse Impacts	58
4.17.4 Cumulative Impacts	58
4.18 LIVESTOCK/GRAZING MANAGEMENT	58
4.18.1 Comparison of Impacts	58
4.18.2 Mitigation Measures	59
4.18.3 Unavoidable Adverse Impacts	59
4.18.4 Cumulative Impacts	59

TABLE OF CONTENTS (Continued)

	<u>Page</u>
4.19 TRANSPORTATION	59
4.19.1 Comparison of Impacts	59
4.19.2 Mitigation Measures	60
4.19.3 Unavoidable Adverse Impacts	60
4.19.4 Cumulative Impacts	60
4.20 VISUAL RESOURCES	60
4.20.1 Comparison of Impacts	60
4.20.2 Mitigation Measures	61
4.20.3 Unavoidable Adverse Impacts	61
4.20.4 Cumulative Impacts	61
4.21 HAZARDOUS MATERIALS	61
4.21.1 Comparison of Impacts	61
4.21.2 Mitigation Measures	62
4.21.3 Unavoidable Adverse Impacts	62
4.21.4 Cumulative Impacts	62
4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	62
4.23 SHORT-TERM USE OF THE ENVIRONMENT VS. LONG-TERM PRODUCTIVITY	63
5.0 REFERENCES	65

LIST OF MAPS

	<u>Page</u>
Map 1.1 General Project Location Map, Stagecoach Draw Unit	2
Map 2.1 Location of Existing and 1999/2000 Proposed Wells and Roads and Areas with Four Wells per Section Development Potential, Stagecoach Draw Unit	7
Map 2.2 General Location of the Revised Potential Access Road to U.S. Highway 191 and the Existing Transmission Pipeline and Compressor Station, Stagecoach Draw Unit	10

LIST OF TABLES

	<u>Page</u>
Table 2.1 Surface Disturbance Comparison, Original EIS Proposed Action and Revised Proposed Action, Stagecoach Draw Unit	11
Table 4.1 Summary Comparison of Impacts, Stagecoach Draw Unit, Sweetwater County, Wyoming	26
Table 4.2 Maximum Modeled Pollutant Concentrations Jonah Field II Natural Gas Project	32

LIST OF FIGURES

	<u>Page</u>
Figure 2.1 Typical Completed and Abandoned Wellbore Diagrams, Stagecoach Draw Unit	13

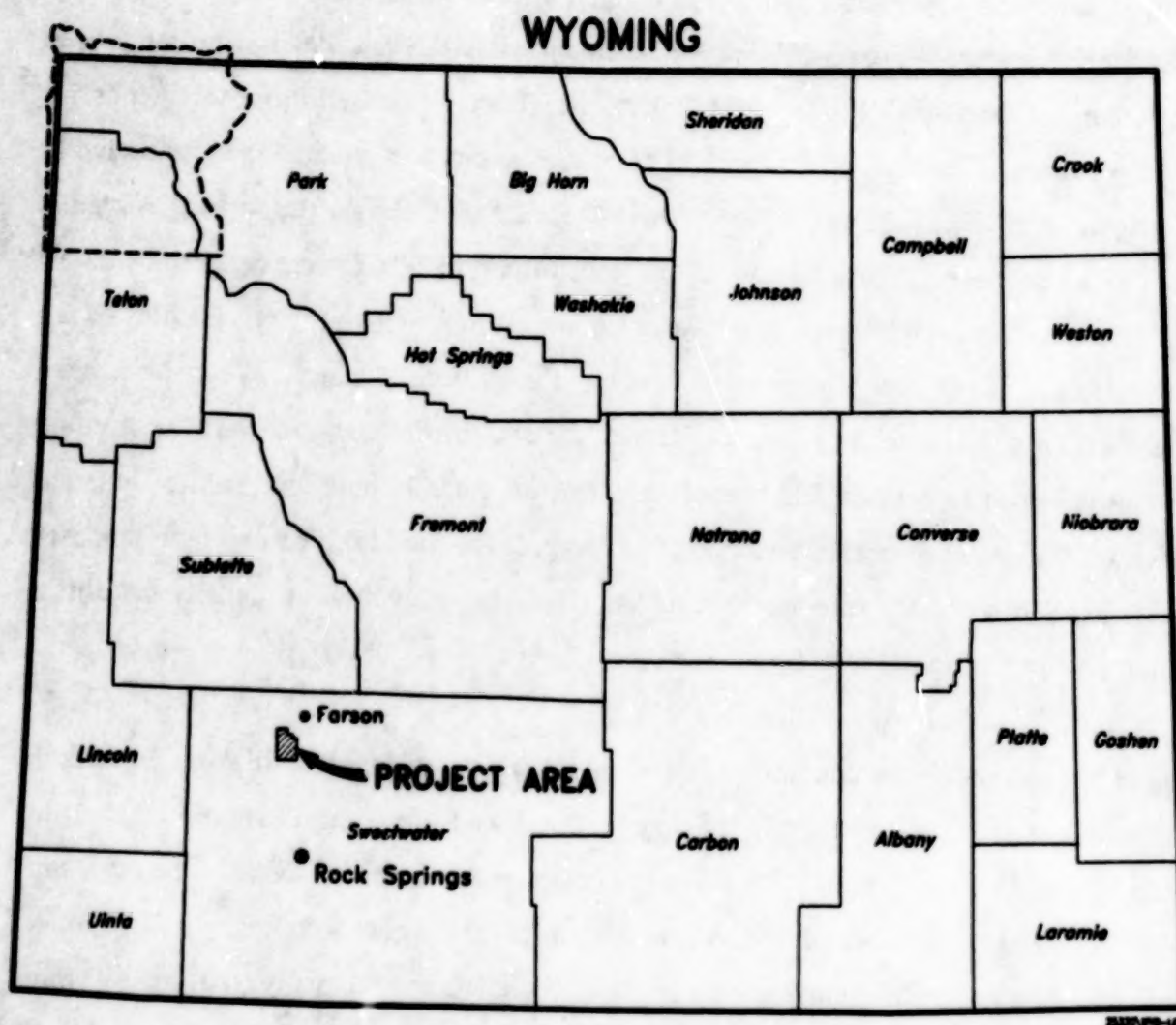
1.0 INTRODUCTION/PURPOSE AND NEED

This comparative analysis report provides a detailed comparison of Texaco Exploration and Production, Inc.'s (Texaco's) original Proposed Action and associated environmental impacts for the Stagecoach Draw Unit project, as defined in the environmental impact statement (EIS) for the project (Bureau of Land Management [BLM] 1995a, 1995b) and authorized in a Record of Decision (ROD) (BLM 1995c), with Texaco's revised Proposed Action for the project area. This report incorporates by reference much of the material presented in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c). As stated in the original EIS, Texaco proposed to drill 72 natural gas wells within the 23,575-acre Stagecoach Draw Unit (the Unit) in northwestern Sweetwater County, Wyoming (Map 1.1). Drilling began in the Unit in 1995 and continues as economic conditions dictate. Wells have been developed on a 320-acre well location density pattern to produce gas from the Almond Formation. Prior to original EIS preparation, five wells had been drilled in the Unit, and currently 19 wells have been developed (one plugged/abandoned). Texaco now proposes to develop a total of 65 wells in the Unit on a 160-acre well location density pattern in certain portions of the Unit.

This report compares the impacts associated with the original/approved Proposed Action, Alternative A of the original EIS (160-acre spacing), and the revised Proposed Action to assess whether a supplemental EIS (SEIS) in compliance with the *National Environmental Policy Act* (NEPA) is required. NEPA requires a federal agency to prepare a SEIS if:

- substantial changes are identified for the authorized action that are relevant to environmental concerns or
- there are significant new circumstances or information relevant to environmental concerns and bearing on the authorized action or its impacts.

Agencies may also prepare supplements when they determine that the purposes of NEPA will be furthered by doing so.



Map 1.1 **General Project Location Map, Stagecoach Draw Unit.**

A point-by-point comparison of the original/approved EIS Proposed Action (i.e., the ROD-authorized action), Alternative A of the original EIS, and the revised Proposed Action, as well as a resource-specific comparison of the potential impacts from each, is provided herein. If the BLM determines that there are substantial changes relevant to environmental concerns resulting from the revised Proposed Action, the BLM will prepare an SEIS; if not, the BLM will issue a revised ROD for the project once the public has had the opportunity to comment on this report. However, since the original ROD for this project was appealed, the BLM will not make a determination on this proposed project change until the U.S. Department of the Interior, Internal Board of Land Appeals (IBLA) makes a ruling on the appeal.

Public notification of the proposed project change was provided to the media and interested parties in July 1997, and eight comment letters were received. All comments received were considered during preparation of this report.

Where analysis and/or analysis methodologies contained in the original EIS have been subsequently modified or expanded for other regional projects, these new analyses are herein incorporated by reference. Notable among these new analyses are the cumulative impact studies provided in the Jonah Field II EIS (BLM 1997a, 1998) and in the Continental Divide/Wamsutter II Draft EIS (DEIS) (BLM 1999a) and associated air quality impact assessment (BLM 1999b).

Texaco proposes to exercise its leaseholders' rights to develop gas reserves in the Unit to provide additional gas supplies to customers, reduce dependence on foreign energy, and obtain a return on their investment. The federal government has leased the federal mineral estate within the Unit for development to achieve maximum recovery of the mineral resource, to meet present and future demands for natural gas, to obtain a 12.5% federal royalty payment, and in response to the *Clean Air Act* amendments of 1990 designed to minimize air pollution.

2.0 COMPARISON OF THE REVISED PROPOSED ACTION WITH THE ORIGINAL PROPOSED ACTION AND ALTERNATIVE A

The environmental analysis completed in the EIS for this project (BLM 1995a, 1995b) included an assessment of the Proposed Action and two alternatives, including a No Action Alternative. The three alternatives were:

- the Proposed Action (72 wells on a 320-acre well location density pattern);
- Alternative A (144 wells on a 160-acre well location density pattern); and
- the No Action Alternative (no wells would be drilled).

Texaco now proposes to develop a total of 65 wells in the Unit on an estimated maximum 160-acre well location density pattern. With only a small amount of pay from the blanket geometry-type reservoir at the Stagecoach Draw Unit, 160 acres is the tightest possible well density necessary to economically recover reserves under forecasted gas prices and, as stated in the original EIS, development of the Unit is not expected to exceed a well location density pattern of 160 acres. Initial field development to determine reservoir extent and Almond Formation sandstone characteristics was on a 640-acre pattern. Additional wells have been drilled on a 320-acre pattern and, due to the low porosity and permeability of the Almond Formation, Texaco has requested that the BLM approve the drilling of wells on a 160-acre pattern in portions of the Unit. This chapter describes all aspects of the revised Proposed Action that differ from the original EIS-identified Alternative A and ROD-approved Proposed Action; similarities are not discussed in detail because they are described in the original EIS (BLM 1995a, 1995b).

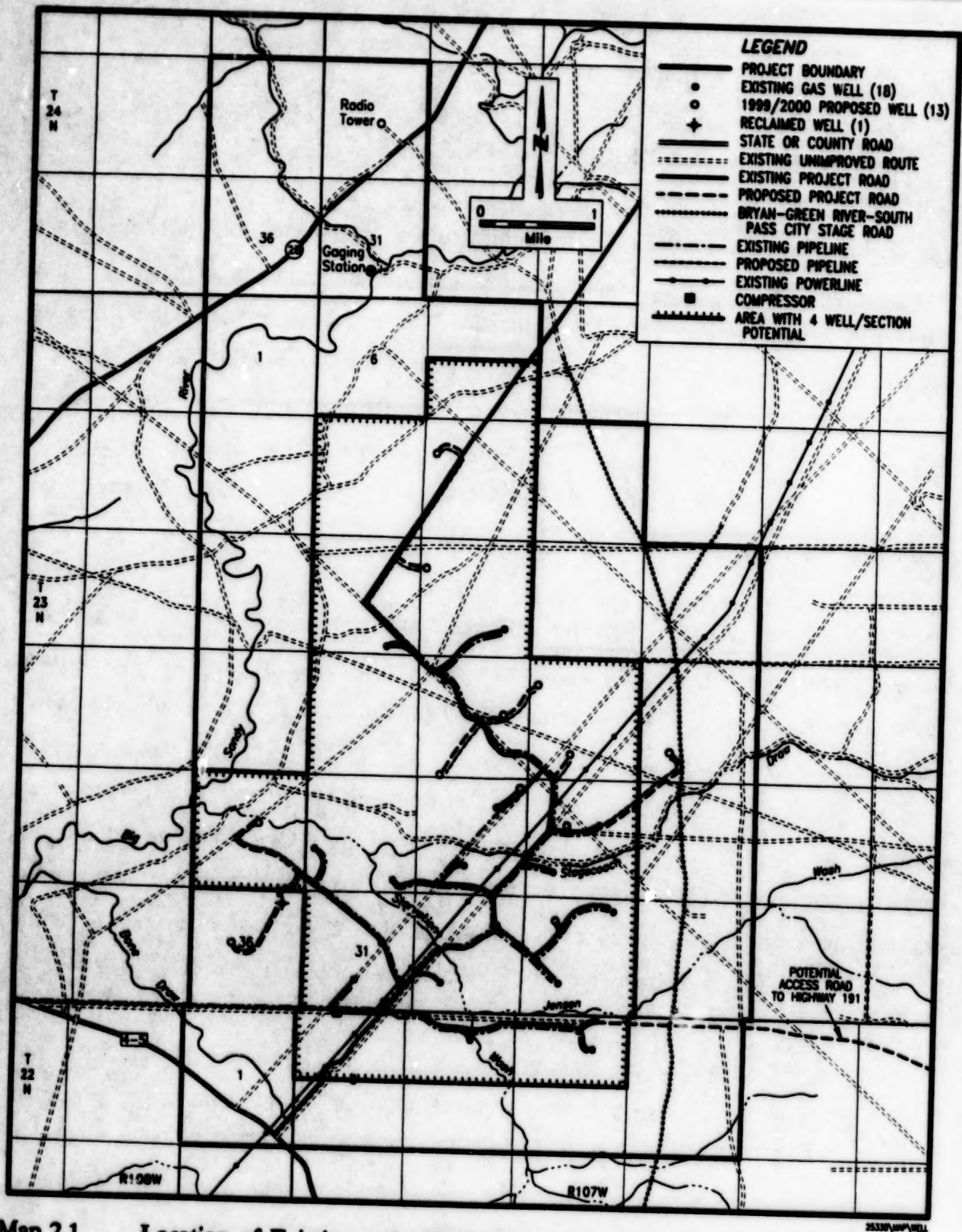
The original Proposed Action involved the drilling, completion, and operation of 72 natural gas wells in the Unit. These wells were to be developed on a 640-acre well location density pattern (one well location per 640-acre section) over 3-4 years to determine reservoir characteristics. Additional wells would then be developed on a 320-acre well location density pattern (two well locations per section) as appropriate based on well performance and economic conditions. Under Alternative A in the original EIS, 144 wells would be

drilled on a 160-acre well location density pattern. The revised Proposed Action involves the drilling, completion, and operation of up to a total of 65 wells in the Unit (a reduction of seven wells from the original Proposed Action and 79 wells from Alternative A) on a 160-acre well location density pattern (four well locations per section). Map 2.1 shows the existing and 1999/2000-proposed wells in the Unit. Development under the revised Proposed Action would be concentrated in the central and south-central portions of the Unit (i.e., areas with the potential for four wells per section). While development would be increased in these areas from that identified under the original Proposed Action, approximately 20 sections of the Unit (approximately 56%) would have reduced levels of development.

The original project area remains unchanged and consists of 23,575 acres in Townships 22, 23, and 24 North, Ranges 107 and 108 West, in Sweetwater County, Wyoming. Ninety-eight percent of the surface and mineral estates are federal and managed by BLM, with the remainder owned by the State of Wyoming. The wells would continue to develop gas reserves in the Almond Formation (Almond B2 sandstone) at depths ranging from 8,000 to 9,000 ft. The estimated initial production of gas from each well remains unchanged at a range of 0.5 to 4 million cubic feet per day (mmcfpd).

All proposed wells would still require Application for Permits to Drill (APDs) to be approved by BLM prior to any surface disturbance, and each APD would contain site-specific information regarding all facets of well development including environmental concerns. Access roads, power lines, and pipelines constructed and/or used by Texaco, which cross federal surface outside of existing unit boundaries, would require separate right-of-way (ROW) authorizations.

Most of the construction, operation, and applicant-committed resource protection practices defined for the original Proposed Action (BLM 1995a, 1995b, 1995c) would remain unchanged under the revised Proposed Action. All changes between Texaco's revised



Map 2.1 Location of Existing and 1999/2000 Proposed Wells and Roads and Areas with Four Wells per Section Development Potential, Stagecoach Draw Unit.

Proposed Action and operations as defined in the original EIS-identified Alternative A and ROD-authorized Proposed Action are discussed below.

2.1 CONSTRUCTION AND DRILLING OPERATIONS

The original EIS (BLM 1995a, 1995b) indicated that well location disturbance would average approximately 2.2 acres per location and that approximate total well location disturbance would be 158.4 acres for 72 locations (Proposed Action) and 316.8 acres for 144 locations (Alternative A). Based on the construction of the existing 19 well locations (18 producing and 1 plugged, abandoned, and reclaimed), initial disturbance would average approximately 2.5 acres per location. Consequently, the total initial disturbance area would be 162.5 acres and the total Life of Project (LOP) disturbance would be 51.2 acres for the revised Proposed Action of 65 well locations (Table 2.1).

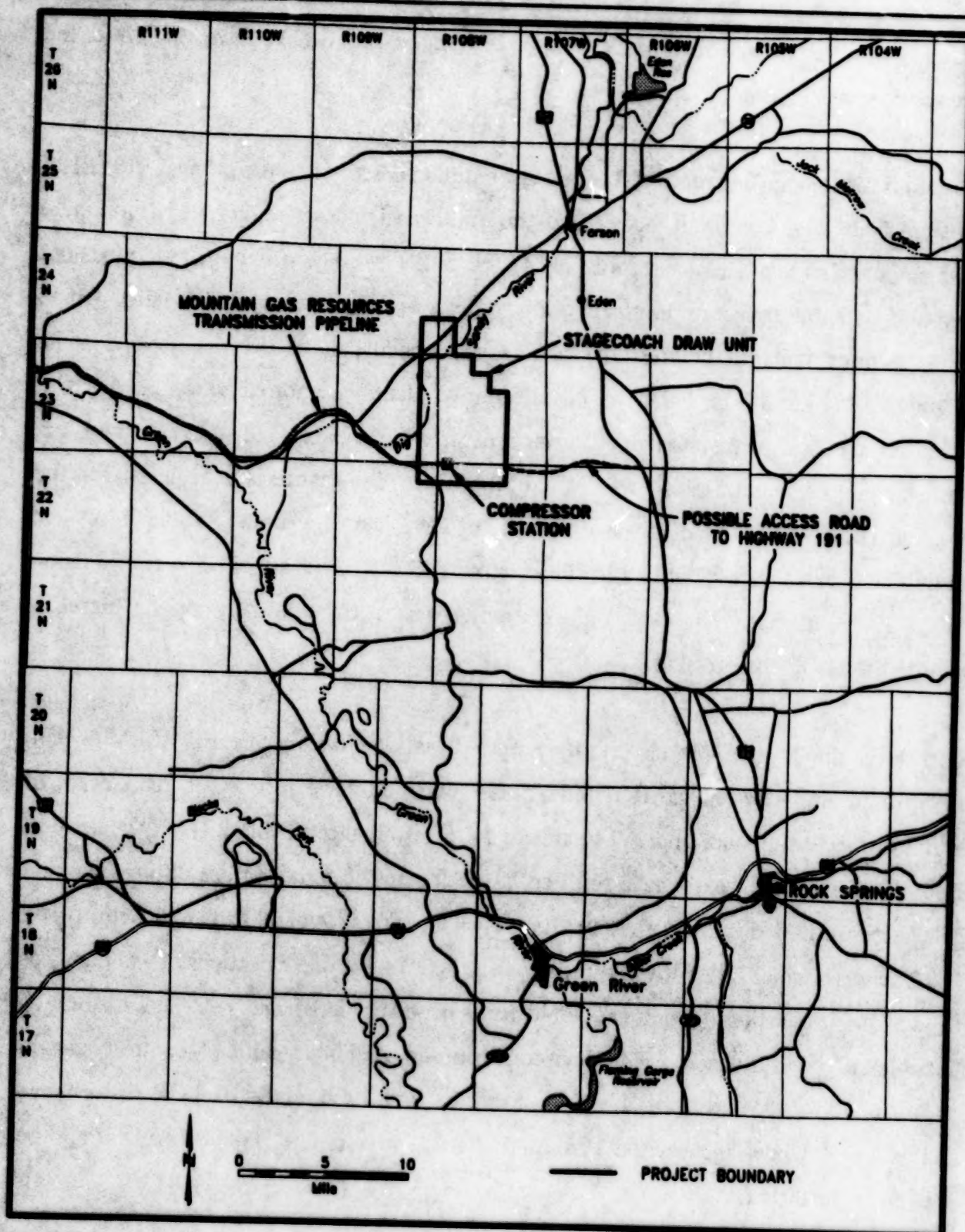
The original EIS Proposed Action also indicated that 63.5 mi of access roads and adjacent gathering pipelines (81.9 mi for Alternative A) would result in an additional surface disturbance of approximately 406.4 acres initially and 214.0 acres for the LOP (526.1 acres initially and 277.9 acres for the LOP under Alternative A). However, the revised Proposed Action identifies only 37.3 mi of access roads and 34.3 mi of gathering pipelines resulting in approximately 226.1 acres and 117.6 acres of initial and LOP surface disturbance for roads, respectively, and an initial surface disturbance of 103.9 acres for gathering pipelines. As with the original Proposed Action and Alternative A, the revised Proposed Action assumes all pipeline disturbance would be reclaimed for the LOP.

The original EIS identified the main access road into the Unit as 5.6-mi road from U.S. Highway 191 to the eastern boundary of the Unit. This route is no longer proposed. Currently, the Unit is accessed from the west via U.S. Highway 372 to Sweetwater County Road 4-5 (Blue Rim Road). An approximately 7.5-mi long field access road (45.5 acres

initial and 29.1 acres LOP disturbance) may be developed from U.S. Highway 191 under the revised Proposed Action (Map 2.2).

The transmission pipeline route and compressor station described in the original EIS (BLM 1995a, 1995b) have been built as specified and authorized under a separate environmental assessment (EA) and decision record (BLM 1995d, 1996a). The original EIS identified a range of potential transmission pipeline alternatives and the approved alternative (BLM 1996a) is most similar to the Western Gas Resources middle alternative as described in the original EIS (BLM 1995a, 1995b). This alternative identified approximately 136 acres of initial surface disturbance and that all surface disturbance would be reclaimed for the LOP; however, approximately 159.4 acres of initial surface disturbance was required for the pipeline (BLM 1995d), and all disturbed areas have been reclaimed (Table 2.1). An additional 5 acres were identified in the original EIS for gas treatment and compression (BLM 1995a, 1995b). However, only 2.5 acres was required initially and 1.5 acres is required for LOP compression.

Therefore, the original 72-well drilling program, as identified in the EIS (BLM 1995a, 1995b) and authorized in the ROD (BLM 1995c), would have resulted in 705.8 acres of initial surface disturbance and 269.4 acres of LOP disturbance (Table 2.1). Alternative A from the original EIS would have resulted in 983.9 acres of initial surface disturbance and 383.7 acres of LOP disturbance. Approximately 436.4 acres (original Proposed Action) and 600.2 acres (original Alternative A) (all pipeline ROWs and those portions of wellpads not needed for production operations) would have been reclaimed and reseeded as soon as possible after disturbance. The revised Proposed Action is anticipated to result in approximately 699.9 acres of initial disturbance and 199.4 acres of LOP disturbance (Table 2.1). Under the revised Proposed Action an estimated 500.5 acres would be reclaimed for the LOP.



Map 2.2

General Location of the Revised Potential Access Road to U.S. Highway 191 and the Existing Transmission Pipeline and Compressor Station, Stagecoach Draw Unit.

Table 2.1 Surface Disturbance Comparison, Original EIS Proposed Action and Revised Proposed Action, Stagecoach Draw Unit.

Item	Surface Disturbance	
	Initial (Acres)	Life of Project (Acres)
Existing Facilities¹		
Well locations (19) ²	47.5 ³	14.4 ⁴
Roads (19.4 mi) ⁵	117.6	61.1
Gathering pipelines (14.1 mi) ⁶	42.7	0
Transmission pipeline (23.6 mi) ⁷	159.4	0
Compressor	2.5	1.5
Subtotal	369.7	77.0
Proposed Developments (1999/2000)⁸		
Well locations (13)	32.5 ³	10.4 ⁴
Roads (4.7 mi) ⁵	28.5	14.8
Gathering pipelines (7.0 mi) ⁶	21.2	0
Subtotal	82.2	25.2
Additional Life of Project Developments		
Well locations (33)	82.5 ³	26.4 ⁴
Roads (13.2 mi) ^{5,9}	80.0	41.6
Potential U.S. Highway 191 Access Road (7.5 mi) ¹⁰	45.5	29.1
Gathering pipelines (13.2 mi) ⁶	49.0	0
Subtotal	248.0	97.1
Total Life of Project Developments		
Well locations (65 wells)	162.5	51.2
Roads (37.3 mi)	226.1	117.6
Potential U.S. Highway 191 Access Road (7.5 mi)	45.5	29.1
Gathering pipelines (34.3 mi)	105.9	0
Transmission pipeline (23.6 mi)	159.4	0
Compressor	2.5	1.5
Grand Total Life of Project Action (Revised Proposed Action)	699.9	199.4
Grand Total for Original Proposed Action/Not Change for Revised Proposed Action¹¹	705.8/-5.9	269.4/-70.0
Grand Total for Original Alternative A/Not Change for Revised Proposed Action¹²	983.9/-284.0	383.7/-184.3

¹ Includes disturbance from all existing well locations, roads, pipelines, and ancillary facilities present in the Stagecoach Draw Unit and the existing transmission pipeline (BLM 1995d).

² Total of 19 wells have been developed (including one plugged/abandoned).

³ Based on an average of 2.5 acres/well location.

⁴ Based on the actual disturbance at existing locations (average = 0.8 acres/active location).

⁵ Assumes initial and LOP disturbance widths of 50 ft and 26 ft, respectively.

⁶ Assumes an initial disturbance width of 25 ft outside road ROWs and all disturbance is reclaimed for the LOP.

⁷ As described in BLM (1995d).

⁸ See Map 2.1.

⁹ Based on an assumed length of 0.4 mi per location.

¹⁰ May not be constructed; assumes a 50-ft initial and 32-ft LOP disturbance width.

¹¹ Original Proposed Action is adapted from BLM (1995a) and includes a total of 72 wells, associated access roads and gathering pipelines, the transmission pipeline (Western Gas Resources middle alternative), and the compressor station. Reduction from original to revised Proposed Action in initial and LOP disturbance is due to seven less well locations and associated reductions/revisions in road and pipeline disturbance.

¹² Original Alternative A is adapted from BLM (1995a) and includes a total of 144 wells, associated access roads and gathering pipelines, the transmission pipeline (Western Gas Resources middle alternative), and the compressor station. Reduction from original to revised Proposed Action in initial and LOP disturbance is due to 79 less well locations and associated reductions/revisions in road and pipeline disturbance.

As with the original Proposed Action, development of new roads that follow existing roads generally would include reclamation on those portions of existing roads not included in the ROW. However, livestock operators have indicated to Texaco that they would like some of these roads to remain unreclaimed. Furthermore, the BLM has not yet identified any existing roads requiring reclamation.

The remainder of the construction and drilling operations as defined in Section 2.1.1 of the original EIS, remains unchanged with the following exceptions.

- Well casing requirements have been modified. Surface casing would now be set to an approximate depth of 2,500 ft, and no intermediate casing is now proposed. Figure 2.1 illustrates the revised completed and abandoned wellbore diagrams.
- Total water use within the Unit would be reduced from 118 acre-feet to approximately 107 acre-feet for the 65 wells.

2.2 COMPLETION OPERATIONS

All procedures identified in Section 2.1.2 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.3 PRODUCTION OPERATIONS

All procedures identified in Section 2.1.3 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.4 PIPELINES

All procedures identified in Section 2.1.4 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action, except the following.

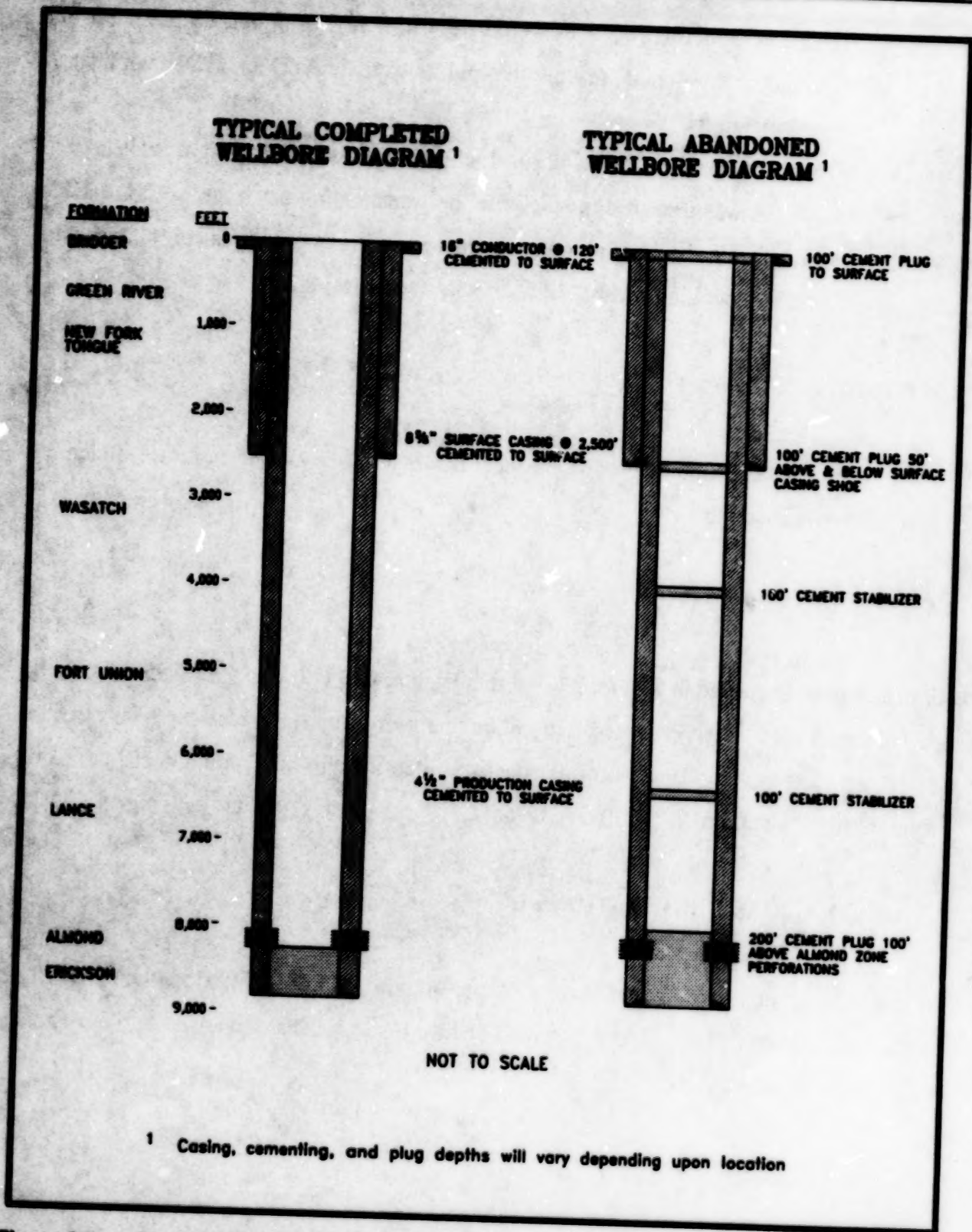


Figure 2.1 Typical Completed and Abandoned Wellbore Diagrams, Stagecoach Draw Unit.

- All gas gathering pipelines would be 4 to 8 inches in outside diameter and would be developed pursuant to pipeline-specific APD and ROW application specifications.
- In addition to backhoes, wheel ditchers may also be used to dig trenches.
- An EA was prepared for the pipeline transporting gas from the Unit (BLM 1995d) and the pipeline was constructed and is operating in compliance with the EA decision record (BLM 1996a) (see Map 2.2).

2.5 POWER LINES

As with the original Proposed Action, no new power lines would be required under the revised Proposed Action.

2.6 COMPRESSOR STATION

All procedures identified in Section 2.1.6 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action. Furthermore, the station has been constructed and is operating in compliance with specifications identified in the EA and decision record prepared for the station (BLM 1995d, 1996a).

2.7 CENTRAL GAS DEHYDRATION PLANT

All procedures identified in Section 2.1.7 of the original EIS (BLM 1995a, 1995b) and the compressor station EA and decision record (BLM 1995d, 1996a) would be applied under the revised Proposed Action.

2.8 CENTRAL AMINE TREATMENT FACILITY

No central amine treatment facility is now proposed. All carbon dioxide would be removed, if necessary, at existing processing plants outside of the project area.

2.9 RECLAMATION AND ABANDONMENT

All procedures identified in Section 2.1.9 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.9.1 Producing Well Locations

All procedures identified in Section 2.1.9.1 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action except the following.

- To date, no solidification has been necessary and none is expected under the revised Proposed Action.
- Based on the acreage required for existing wells, an average of 0.8 acre of disturbance per well location would be required for the LOP (see Table 2.1).

2.9.2 Access Roads

All procedures identified in Section 2.1.9.2 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.9.3 Pipeline Corridors

All procedures identified in Section 2.1.9.3 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.9.4 Final Abandonment of Facilities

All procedures identified in Section 2.1.9.4 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.10 WORK FORCE NEEDS**2.10.1 Construction Operations**

All procedures identified in Section 2.1.10.1 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action except that, with the new total of 65 wells, work force requirements would be reduced from 4.2 to 3.8 person-years.

2.10.2 Drilling Operations

All procedures identified in Section 2.1.10.2 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action, except that with the new total of 65 wells, work force requirements would be reduced from 145.4 to 131.3 person-years.

2.10.3 Completion Personnel

All procedures identified in Section 2.1.10.3 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action, except that with the new total of 65 wells, work force requirements would be reduced from 46.2 to 41.7 person-years.

2.10.4 Operation and Maintenance

All procedures identified in Section 2.1.10.4 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.10.5 Workforce

All procedures identified in Section 2.1.10.5 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action, except that with the new total of 65 wells, work force requirements would be reduced from 13.8 to 12.5 person-years.

2.10.6 Abandonment

All procedures identified in Section 2.1.10.6 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action, except that with the new total of 65 wells, work force requirements would be reduced from 13.8 to 12.5 person-years. An abandoned well bore diagram is provided in Figure 2.1.

2.11 HAZARDOUS MATERIALS

All procedures identified in Section 2.1.11 of the original EIS (BLM 1995a, 1995b) would be applied under the revised Proposed Action.

2.12 APPLICANT-COMMITTED PRACTICES

The original EIS-identified and ROD-authorized Proposed Action (BLM 1995a, 1995b, 1995c) provided various practices to protect the environment during project development. The revised Proposed Action would adhere to these practices.

2.12.1 Cultural Resources

All procedures identified in Section 2.1.12.1 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

Additionally, a cultural resource reconnaissance of the Bryan to South Pass Road for the Stagecoach Draw project has been completed (Johnson 1998).

2.12.2 Paleontological Resources

All procedures identified in Section 2.1.12.2 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.3 Special Status Plants

A survey of the project area to determine the likelihood of occurrence of special status plants and their habitats was financed by Texaco in 1993 (Kass 1994). All procedures identified in Section 2.1.12.3 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.4 Raptors and Sage Grouse

All procedures identified in Section 2.1.12.4 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.5 Surface Disturbance

All procedures identified in Section 2.1.12.5 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.6 Seasonal Big Game Situations

All procedures identified in Section 2.1.12.6 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.7 Riparian/Wetlands Management

All procedures identified in Section 2.1.12.7 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.8 Threatened, Endangered, Candidate, and Special Status Species

The elevated concern regarding avoidance of loggerhead shrike nests as identified in the original EIS (BLM 1995a, 1995b) is no longer applicable since the species is not now considered sensitive by the BLM. Protocol for the avoidance of mountain plover impacts has changed since the publication of the Stagecoach Draw EIS (BLM 1995a, 1995b) and ROD (BLM 1995c). New avoidance/protection measures for mountain plover are provided in Section 4.12.2 of this report. All other applicant-committed measures identified in the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.9 Environmental Training Program

All procedures identified in Section 2.1.12.9 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.10 Poaching and Littering Policies

All procedures identified in Section 2.1.12.10 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.11 Firearms and Dogs

All procedures identified in Section 2.1.12.11 of the original EIS (BLM 1995a, 1995b) and expanded in the ROD (BLM 1995c) would be applied under the revised Proposed Action.

2.12.12 Transportation Requirements

All procedures identified in Section 2.1.12.12 of the original EIS (BLM 1995a, 1995b), expanded in the ROD (BLM 1995c), and specified in Texaco's Transportation Plan (Uintah Engineering & Land Surveying [UELS] and Texaco 1997) would be applied under the revised Proposed Action.

3.0 AFFECTED ENVIRONMENT

The Stagecoach Draw EIS (BLM 1995a, 1995b) described the existing conditions of critical elements in the project area. In addition to the critical elements, the EIS discussed the existing conditions of the topography/physiography, mineral resources, geology, paleontology, soils, noise, vegetation, wildlife, wild horses, socioeconomics, land use, visual resources, and livestock and grazing management in the Unit. For this comparison report, only those resources which may have changed since the issuance of the original EIS are discussed.

3.1 AIR QUALITY

Detailed and updated climate and air quality data for the Green River Basin are presented in the EIS for the Jonah Field II natural gas project (BLM 1997a, 1998), the DEIS for the Continental Divide/Wamsutter II natural gas project (BLM 1999a), and the air quality impact assessment technical support document for the Continental Divide/Wamsutter II Project (BLM 1999b). Although specific air quality monitoring has not been conducted in the Unit, air quality conditions are likely to be very good, as characterized by limited air pollution emission sources (BLM 1999a), and air quality is generally considered excellent (BLM 1998). Regional criteria air pollutant concentration background values are also well-below established standards (BLM 1999a). The most significant air pollutant throughout the Unit is likely to be particulate matter, occurring as fugitive dust (uncontrolled, wind-carried particles) from natural sources and existing disturbances (BLM 1998).

3.2 MINERAL RESOURCES

No changes have occurred to the mineral resources within the Unit other than the project development features depicted on Map 2.1.

3.3 WATER RESOURCES

The original EIS (BLM 1995a, 1995b) indicated that roads and other developments within the Simpson Gulch watershed of the Big Sandy River drainage had disturbed approximately 600 acres (0.4%) of the watershed. The only other known developments that have been constructed in the watershed since the issuance of the original EIS are the existing facilities present within the Unit (see Map 2.1).

3.4 NOISE AND ODOR

No specific noise level or odor data are available for the project area. However, since there are currently 13 more existing wells in the Unit, ambient noise levels may be higher and some new odors may be present. Odors are likely to be quickly dispersed by the wind.

3.5 VEGETATION RESOURCES

Changes to native vegetation communities within the project area since the issuance of the original EIS have occurred as a result of project developments. No known changes to federally listed threatened and endangered (T&E) and/or BLM-managed sensitive plant species are known for the area. Additional disturbed and reclaimed areas are now present in the area.

3.6 WILDLIFE AND FISHERIES

Although Wyoming Game and Fish Department big game and upland game bird management objectives may have changed since the issuance of the original EIS, these changes are unlikely to affect the impact assessments presented in the original EIS. Additionally, wildlife habitat loss on the area has occurred as a result of the project as authorized in the ROD. No changes to T&E and/or BLM-managed sensitive wildlife

species are known to have occurred in the area, other than the change in survey protocol for mountain plover (see Section 4.12.2).

3.7 WILD HORSES

Although BLM management objectives may have changed since the issuance of the original EIS, these changes are unlikely to affect the impact assessment presented in the original EIS.

3.8 CULTURAL RESOURCES

Section 3.3 of the original EIS (BLM 1995a, 1995b) mentioned the Bryan-Green River-South Pass City Stage Road occurring in the Stagecoach Draw Unit (see Map 2.1). Recent reconnaissance of this trail has been completed (Johnson 1998). The trail is located in the southeastern portion of the Unit and has been determined as eligible to the National Register of Historic Places (NRHP).

The BLM Green River Resource Area management plan (BLM 1992, 1996b, 1997b) provides guidance for expansion era (i.e., 1870-1940) roads, which are managed according to their context. Expansion era roads are those routes developed after the establishment of the Transcontinental Railroad in Wyoming in 1869. Qualifying segments of these roads would be managed according to management prescriptions outlined in an activity plan, once developed. The entire Bryan-Green River-South Pass City Stage Road is considered eligible. Such roads would have management prescriptions similar to those in the BLM comprehensive historic trails management plan (BLM 1986) although the 0.25-mi protective corridor may not always be applied.

3.9 SOCIOECONOMICS

Changes in regional populations, employment, housing availability, and infrastructure have occurred since the issuance of the original EIS. However, these changes have been minor and do not affect the impact assessments presented in the original EIS.

3.10 ENVIRONMENTAL JUSTICE

Executive Order 12898 directs BLM to assess whether the Proposed Action or alternatives would have disproportionately high and adverse human health or environmental impacts on minority and low-income populations. Identification of environmental issues is accomplished through public involvement and the scoping process. Native American tribes potentially affected by the project have been contacted by BLM and invited to comment on the project. The BLM determined that issues associated with environmental justice would not be affected by the project; therefore, they are not discussed further. Coordination with Native American tribes will continue as necessary on a site-specific basis.

3.11 TRANSPORTATION

Changes to the transportation system on and adjacent to the project area have occurred in conjunction with project development and as identified in UELS and Texaco (1997).

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION/MONITORING

This section presents a comparison of the potential environmental consequences of the original Proposed Action and Alternative A with those of the revised Proposed Action for each affected resource. The original EIS (BLM 1995a, 1995b) identified impacts associated with the Proposed Action (one well/320 acres), Alternative A (one well/160 acres), and a No Action Alternative, and impacts associated with the revised Proposed Action are generally similar to those of the original Proposed Action and/or Alternative A. The mitigation and monitoring measures as presented in the Stagecoach Draw Unit ROD (BLM 1995c) are presented herein and compared with those identified for the revised Proposed Action. In addition, a comparison of unavoidable adverse impacts and cumulative impacts is also presented. Table 4.1 summarizes impacts associated with the original Proposed Action, Alternative A, and the revised Proposed Action for each resource.

4.1 AIR QUALITY

4.1.1 Comparison of Impacts

Impacts to air quality from the revised Proposed Action generally would remain unchanged from those described for the original Proposed Action and Alternative A. Near-field air quality impacts would be increased from those of the original Proposed Action and decreased from those of Alternative A and would remain insignificant (i.e., less than Wyoming Ambient Air Quality Standards [WAAQS]) and National Ambient Air Quality Standards [NAAQS]) since well location densities would be less than those identified for the Jonah II Field EIS (i.e., <8 wells/640 acres) and the analysis for the Jonah II project revealed less than significant near-field air quality impacts for that project (BLM 1997a, 1998). Modeled near-field pollutant concentrations for the Jonah II field are provided in Table 4.2. Updated regional air quality impacts (Air Quality-related Values) including those from this project are also described in the Jonah II Field EIS (BLM 1997a, 1998) and the

Stagecoach Draw Unit Comparative Analysis

Table 4.1 Summary Comparison of Impacts, Stagecoach Draw Unit, Sweetwater County, Wyoming.

Impact by Environmental Resource	Post-Applicant-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
Increased criteria and hazardous air pollutant emissions	Negligible to moderate; small increases in dust and emissions adjacent to well locations, roads, and ancillary facilities	Increased over Proposed Action, but negligible to moderate	Impact potential increased from original Proposed Action, but reduced from Alternative A; increases in dust and emissions adjacent to well locations, roads, and ancillary facilities may be greater in areas of concentrated development but would remain at less than significant levels
Air Quality-related Values	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; project-specific impacts to regional visibility degradation and/or acid rain would be insignificant
Cuts and fills at well locations and along roads	Negligible; no major landscape alterations	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Alteration of surface drainages	Negligible; no long-term modifications to drainages	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Depletion of gas and condensate reserves	Significant beneficial impact	Same as Proposed Action	Same as original Proposed Action and Alternative A
Incomplete recovery of available natural gas reserves	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; the proposed project revision is designed in part to reduce this potential impact
Localized temporary loss of access to mineral reserves	No impact; no active mining operations	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Flood damage to pipelines and facilities	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Earthquake damage to pipelines and facilities	Negligible; very low earthquake potential	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A

Table 4.1 (Continued)

Impact by Environmental Resource	Post-Application-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
Landslides and slumping at construction sites	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Reactivation of dunes due to ground cover removal	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disturbance/destruction of important fossils	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Loss of important fossil materials due to private collection or vandalism	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Discovery of previously unknown fossils	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disturbance and erosional loss of soils	Negligible during construction and LOP; 570 acres initial disturbance and 270 acres for LOP	Same as Proposed Action, but increased to 848 acres initial disturbance and 384 acres for the LOP	Impact potential reduced from original Proposed Action and Alternative A
Soil compaction and mixing of soil horizons; decreased topsoil productivity	Not specifically defined	Not specifically defined	Impact potential reduced from original Proposed Action since less surface area would be disturbed (699.9 acres versus 705.8 acres short-term and 199.4 acres versus 269.4 acres long-term) and reduced from Alternative A (983.9 acres short-term and 383.7 acres long-term)
Contamination due to accidental hazardous material discharge	Not specifically defined	Not specifically defined	Impact potential reduced from original Proposed Action since fewer wells would be drilled (65 versus 72) and less surface area would be disturbed (699.9 acres versus 705.8 acres short-term) and reduced from Alternative A (144 wells, 983.9 acres initial surface disturbance, and 383.7 acres long-term disturbance)
Reactivation of dunes due to ground cover removal	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A

Table 4.1 (Continued)

Impact by Environmental Resource	Post-Applicant-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
Increased turbidity, salinity, and sedimentation of surface waters due to runoff from disturbed areas	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Consumption of surface water during drilling and completion operations	No impact; only 10-20 acre-feet of water per year from Big Sandy River	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Contamination of surface waters from accidental hazardous material spills and/or discharge of unsuitable quality produced water and/or pipeline test water	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Flood damage to pipelines and facilities	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Reduced ground water availability from withdrawal of drilling water	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; sufficient ground water remains for current users
Contamination of ground water from discharge of produced water; accidental hazardous material spills, and/or cross-aquifer mixing through well bores	Negligible/no impact	Negligible/no impact; impact potential increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A; modified casing requirements
Increased noise levels	Moderate increases locally during construction and drilling; negligible for LOP	Moderate, and duration increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A; noise levels may be greater in areas of concentrated development
Presence of offensive odors proximal to facilities and roads	Negligible; odors would be temporary, localized, and dispersed by the wind, LOP	Negligible and potential incidence increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A; odors may be more abundant in areas of concentrated development
Removal of vegetation	Negligible; 570 acres initial disturbance and 270 acres for LOP	Same as Proposed Action, but increased to 848 acres initial disturbance and 384 acres for the LOP	Impact potential reduced from original Proposed Action and Alternative A

Table 4.1 (Continued)

Impact by Environmental Resource	Post-Applicant-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
Changes in vegetation diversity following reclamation (i.e., shrubland to grassland) and potential weed infestation	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disturbance of wetlands	No impact	No impact	Impact potential reduced from original Proposed Action and Alternative A
Disturbance of riparian areas	No impact	No impact	Impact potential reduced from original Proposed Action and Alternative A
Special status plants	Unlikely to jeopardize	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Reclamation unsuccessful after 5 years	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; reclamation efforts would continue until areas are adequately reclaimed
Loss of pronghorn crucial habitat	Negligible; initial disturbance of 570 acres pronghorn crucial range, with 377 acres lost for LOP	Same as Proposed Action, but increased to 848 acres initial disturbance and 600 acres for the LOP	Impact potential reduced from original Proposed Action and Alternative A
Loss of sage grouse productivity	Negligible	Negligible	Impact potential reduced from original Proposed Action and Alternative A
Loss of raptor productivity	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Animal displacement and/or stress	Negligible	Negligible, but some increase over Proposed Action due to increased activity	Impact potential increased from original Proposed Action but reduced from Alternative A; animals may be more likely to be displaced from areas with concentrated development
Increased wildlife mortality from project-related activities	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Overall wildlife habitat degradation	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A

Table 4.1 (Continued)

Impact by Environmental Resource	Post-Applicant-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
Mortality or disturbance of any listed or candidate T&E species or disturbance of critical habitat for listed and candidate T&E species	Not likely to adversely affect	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Reductions in other special status species due to mortality or habitat removal	Not likely to jeopardize	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Wild horse displacement or mortality due to habitat destruction or other project-related activities	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disturbance/destruction of important sites	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Loss of important cultural materials due to private collection or vandalism	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disturbance of important Native American religious or culturally significant sites	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Increases in local populations	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Increase in demand for temporary housing	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Increase in demand for local government facilities or services	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Disruption or change of character of communities	Negligible	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Increase in tax revenue and royalties and stimulation of local economy	Significant beneficial impacts for LOP	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
Environmental justice	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; no minority or low-income populations would be affected

Table 4.1 (Continued)

Impact by Environmental Resource	Post-Application-Committed Mitigation/Protection Measure Impacts		
	Original Proposed Action ¹	Alternative A ²	Revised Proposed Action ³
ANIMAL RESOURCES			
Short-term reduction of animal unit months (AUMs) (grass forage) for livestock, wild horses, and wildlife	Negligible; initial loss of 37 AUMs	Negligible; initial loss of 54 AUMs	Impact potential reduced from original Proposed Action and Alternative A
Increase in AUMs (grass forage) following reclamation	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; reclaimed areas may provide more grass forage than adjacent undisturbed areas
Changes in character and recreational uses of the area due to construction, presence of facilities, noise, dust, odor, and increased human activities	Moderate for LOP	Moderate, increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A; overall decrease in disturbance; however, areas with concentrated disturbance are more likely to be avoided
Non-conformance with county, state, or federal land use plans	No impact to land ownership; significant change in land use	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
TRANSPORTATION			
Additional traffic on state and U.S. highways	Negligible	Negligible	Impact potential reduced from original Proposed Action and Alternative A
Additional traffic on county roads and near project area	Moderate	Moderate	Impact potential reduced from original Proposed Action and Alternative A
Road failure	Not defined	Not defined	Impact potential reduced from original Proposed Action and Alternative A; road maintenance and repair actions would be initiated as necessary to ensure no long-term impacts
VISUAL RESOURCES			
Modification in the basic elements (form, line, color, or texture) of visual resources by presence of facilities and equipment, or modification during construction	Moderate; all disturbance is in VRM Class IV area	Same as Proposed Action	Impact potential reduced from original Proposed Action and Alternative A
WATER RESOURCES			
Soil, surface water, and ground water contamination and wildlife exposure as a result of accidental spills, pipeline ruptures, etc.	Negligible	Negligible, but increased over Proposed Action	Impact potential reduced from original Proposed Action and Alternative A

¹ Total of 72 wells on a 320-acre well location density pattern.

² Total of 144 wells on a 160-acre well location density pattern.

³ Total of 65 wells on a 160-acre well location density pattern.

Table 4.2 Maximum Modeled Pollutant Concentrations Jonah Field II Natural Gas Project.¹

Pollutant ²	Averaging Time	Total Predicted Concentration ($\mu\text{g}/\text{m}^3$)	WAAQS ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
TSP	24-hour	132.0	150	N/A ³
PM ₁₀	Annual	19.9	50	50
	24-hour	77.4	150	150
SO ₂	Annual	11.0	60	80
	24-hour	56.6	260	365
	3-hour	171.9	1,300	1,300
NO ₂	Annual	22.0	100	100
CO	8-hour	1,747.0	10,000	10,000
	1-hour	3,801.0	40,000	40,000
Ozone	1-hour	141.0	160	235

¹ Adapted from BLM (1998).

² TSP = total suspended particles; PM₁₀ = particles generally less than 10 microns in diameter; SO₂ = sulfur dioxide; NO₂ = nitrogen dioxide; and CO = carbon monoxide.

³ N/A = not applicable.

Continental Divide/Wamsutter II DEIS (BLM 1999a) and its air quality technical support document (BLM 1999b) and are discussed further in Section 4.1.4.

Air quality impacts associated with compressor station emissions were also found to be insignificant in the EA for the compressor station (BLM 1995d). Additionally, the currently permitted compression for the field is 458 horsepower (hp), which is notably less than that analyzed in the EA (6,000 hp), and it is anticipated that less than 2,000 hp of total compression would be required for the field. The regional air quality impact assessments for the Jonah Field II Project and Continental Divide/Wamsutter II Project estimated that 1,560 hp of compression would be necessary for the Stagecoach Draw Project.

4.1.2 Mitigation Measures

Mitigation measures identified for the original Proposed Action and specified in the ROD would be unchanged for the revised Proposed Action. The Stagecoach Draw ROD (BLM 1995c) specified that any mitigation measures determined as appropriate for the Moxa Arch and Fontenelle projects (BLM 1997c) would be applied to the Stagecoach Draw Project as appropriate. The BLM has not identified any additionally required project-specific mitigation measures for air quality; however, the BLM will continue to track regional oxides-of-nitrogen emissions.

4.1.3 Unavoidable Adverse Impacts

Unavoidable adverse air quality impacts from the revised Proposed Action would be reduced from those of the original Proposed Action.

4.1.4 Cumulative Impacts

Detailed cumulative air quality impacts are presented in the Jonah II Field EIS (BLM 1997a, 1998) and Continental Divide/Wamsutter II DEIS (BLM 1999a) and its air quality impact assessment (BLM 1999b) for the Class I Bridger Wilderness Area; the Stagecoach Draw Project was included in these analyses. The Stagecoach Draw Unit EIS identifies no significant air quality impacts; however, impacts from the project in combination with existing and reasonably foreseeable future developments would contribute to increases in oxides-of-nitrogen and particulate matter emissions which would augment potential reductions in regional visibility. Although cumulative visibility impacts may be significant regionally (BLM 1998), the more refined impact analyses presented for the Continental Divide/Wamsutter II Project (BLM 1999a, 1999b) revealed no cumulative visibility impacts to the Bridger Wilderness Area. As construction-related emissions are reduced, impacts would be reduced. No permanent impacts are expected. A minor reduction in cumulative

air quality impacts is anticipated as a result of the proposed project change from the original to the revised Proposed Action.

4.2 TOPOGRAPHY/PHYSIOGRAPHY

4.2.1 Comparison of Impacts

The original EIS identified the primary impacts to topography and physiography as topographic changes due to cut-and-fill activities associated with well locations and ROWs. Total initial and LOP surface disturbance for the revised Proposed Action would be reduced from that of the original Proposed Action and Alternative A (BLM 1995a, 1995b). The maximum initial and LOP cut-and-fill disturbance for the revised Proposed Action would be 699.9 acres and 199.4 acres (3.0% and 0.8% of the project area), respectively. Because all facilities would eventually be reclaimed, there would be no permanent impacts to topography/physiography.

4.2.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.2.3 Unavoidable Adverse Impacts

Because all facilities would eventually be reclaimed, there would be no permanent impacts. However, some initial disturbance of the soil surface by cut-and-fill operations would be unavoidable due to project construction.

4.2.4 Cumulative Impacts

Cumulative impacts to topography/physiography under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.3 MINERAL RESOURCES

4.3.1 Comparison of Impacts

As with the original Proposed Action and Alternative A (BLM 1995a, 1995b), the revised Proposed Action would result in a significant beneficial impact to recoverable gas and oil reserves from the Almond Formation and other formations underlying the project area; however, once produced, these reserves would be unavailable for future generations. The revised Proposed Action (160-acre well location density on portions of the project area) would reduce the potential for incomplete recovery of reserves from that of the original Proposed Action. The revised Proposed Action would have no impact on coal recovery, the mining of salable minerals such as sand and gravel, or the mining of sodium bicarbonate and sodium carbonate.

4.3.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.3.3 Unavoidable Adverse Impacts

No unavoidable adverse impacts to mineral resources other than the loss of oil and gas reserves for future generations are anticipated as a result of the revised Proposed Action.

4.3.4 Cumulative Impacts

Regional mineral resource development—most notably natural gas operations—would continue; however, cumulative impacts to mineral resources under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A due to the decreased number of wells and reduced area of disturbance required for the revised Proposed Action.

4.4 GEOLOGIC HAZARDS

4.4.1 Comparison of Impacts

Potential impacts to and from geologic hazards would be reduced from those of the original Proposed Action and Alternative A (BLM 1995a, 1995b) for the LOP and beyond under implementation of the revised Proposed Action, since less surface disturbance would occur.

4.4.2 Mitigation Measures

No additional mitigation measures beyond those identified for the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.4.3 Unavoidable Adverse Impacts

No unavoidable adverse impacts to or from geologic hazards are expected to occur as a result of the revised Proposed Action.

4.4.4 Cumulative Impacts

Cumulative impacts to or from geologic hazards under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.5 PALEONTOLOGICAL RESOURCES

4.5.1 Cumulation of Impacts

As discussed in the original EIS (BLM 1995a, 1995b), direct and indirect impacts to significant paleontological resources from the Proposed Action and Alternative A would be insignificant. Impacts associated with the revised Proposed Action would be reduced due to less surface disturbance.

4.5.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.5.3 Unavoidable Adverse Impacts

Potential unavoidable adverse impacts to paleontological resources would be reduced from those of the original Proposed Action and Alternative A under implementation of the revised Proposed Action. Impacts under any alternative would be limited to potential increases in illegal fossil collection due to improved access and potential damage to undiscovered fossils by accidental contact during construction.

4.5.4 Cumulative Impacts

Cumulative impacts to paleontological resources under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.6 SOILS

4.6.1 Comparison of Impacts

Impacts to soils associated with the revised Proposed Action would be less than the impacts described in the original EIS for the Proposed Action and Alternative A (BLM 1995a, 1995b), since the amount of initial and LOP surface disturbance would be reduced. Direct impacts to soils could result in: 1) soil compaction, horizon mixing, and decreased productivity; 2) increased runoff, erosion, and sedimentation; 3) contamination due to accidental spills; and/or 4) reactivation of stabilized sand dunes. Impacts from soil compaction, mixing, and reduced productivity; increased runoff, erosion, and sedimentation; and/or reactivation of dunes would be held to insignificant levels through appropriate reclamation. Potential impacts due to soil contamination from accidental spills would be held to insignificant levels through proper containment of potentially hazardous materials and appropriate and timely cleanup of accidental spills.

4.6.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.6.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts to soils resources (i.e., erosional loss) would be reduced from those of the original Proposed Action and Alternative A under implementation of the revised Proposed Action.

4.6.4 Cumulative Impacts

Cumulative impacts to soils under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.7 SURFACE AND GROUND WATER RESOURCES

4.7.1 Comparison of Impacts

Impacts to surface and ground water associated with the revised Proposed Action would be less than those associated with the original Proposed Action and Alternative A (BLM 1995a, 1995b), since the amount of surface disturbance would be reduced (i.e., decreased potential turbidity, salinity, and sedimentation), as would the estimated average depletion (9-18 acre-ft/year) of surface water from the Big Sandy River.

4.7.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.7.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts to surface and ground water resources (i.e., depletions) would be reduced from those of the original Proposed Action and Alternative A under the revised Proposed Action.

4.7.4 Cumulative Impacts

Cumulative impacts to surface and ground water resources under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.8 NOISE AND ODOR

4.8.1 Comparison of Impacts

Noise levels and odors associated with the revised Proposed Action generally would be reduced from those of the original Proposed Action and Alternative A; however, noise and odors may be more abundant in areas of concentrated development. Noise and odors would be generated through wellpad, road, and pipeline construction; drilling; ancillary facility operations; vehicle traffic; and site rehabilitations. Impacts from noise and odors would remain insignificant for the LOP.

4.8.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.3.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts from noise and odor due to project construction, drilling, and production operations would be reduced from those of the original Proposed Action and Alternative A under the revised Proposed Action.

4.3.4 Cumulative Impacts

Cumulative noise and odor impacts under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.9 VEGETATION

4.9.1 Comparison of Impacts

Impacts to vegetation associated with the revised Proposed Action would be less than those associated with the original Proposed Action and Alternative A (BLM 1995a, 1995b) since the amount of surface disturbance would be reduced. Whereas the original Proposed Action and Alternative A would have disturbed 705.8 acres and 983.9 acres, respectively, initially (3.0% and 4.2% of the Stagecoach Draw Unit) and 269.4 acres and 383.7 acres, respectively, for the LOP (1.1% and 1.6% of the Unit), the revised Proposed Action would disturb 699.9 acres initially (3.0%) and 199.4 acres for the LOP (0.8%) (see Table 2.1). Approximately 72% of the total disturbance (500.5 acres) would be short-term and would be reclaimed and reseeded during the first appropriate season after initial disturbance, whereas the remaining disturbance (199.4 acres) would be for the LOP. Reclamation efforts would continue until all areas are adequately reclaimed.

Potential impacts to special status plants would be reduced under the revised Proposed Action, and all areas subject to surface disturbance would be examined by a qualified botanist prior to disturbance to minimize potential impacts to these species.

4.9.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.9.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts include some loss of vegetation during construction of wellpads, roads, and pipelines; however, impacts would be reduced from those of the original Proposed Action and Alternative A under the revised Proposed Action.

4.9.4 Cumulative Impacts

Cumulative vegetation impacts under the revised Proposed Action would be reduced from those identified for the original Proposed Action and Alternative A.

4.10 WETLANDS AND RIPARIAN AREAS

4.10.1 Cumulative Impacts

As with the original Proposed Action and Alternative A, since no surface disturbance would occur within 500 ft of wetlands/riparian areas, there would be no impacts to these resources under the revised Proposed Action.

4.10.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (1995c) would be required for the revised Proposed Action.

4.10.3 Unavoidable Adverse Impacts

As with the original Proposed Action and Alternative A, no unavoidable adverse impacts to wetlands or riparian areas are anticipated with the implementation of the revised Proposed Action.

4.10.4 Cumulative Impacts

Cumulative impacts to wetlands/riparian areas under the revised Proposed Action would be as described in the original Proposed Action and Alternative A (BLM 1995a, 1995b).

4.11 WILDLIFE AND FISHERIES

4.11.1 Big Game/Other Animals

4.11.1.1 Comparison of Impacts

As with the original EIS (BLM 1995a, 1995b), all of the proposed development associated with the revised Proposed Action is anticipated to be in antelope crucial winter/yearlong habitat, resulting in an initial direct loss of 699.9 acres of such habitat (5.9 acres less than the original Proposed Action and 284.0 acres less than Alternative A). Of this loss, 500.5 acres (71.5%) would be reclaimed for the LOP. Therefore, impacts to big game associated with the revised Proposed Action would be less than the impacts described in the

original EIS. Shrub production on disturbed and reclaimed areas would be lost for many years; however, grasses and forbs would be available for spring/summer/fall forage.

The 699.9 acres of antelope crucial winter and crucial winter/yearlong habitat that would be lost for some period of time represents approximately 0.09% of the crucial winter and crucial winter/yearlong habitat in the Sublette antelope herd area. The original EIS indicated that scientific data regarding the carrying capacity of crucial winter and crucial winter/yearlong habitats in the Sublette antelope herd are not available. However, the original EIS indicated a reduction in the carrying capacity of approximately 21 antelope for the Proposed Action and 32 antelope for Alternate A. Therefore, the revised Proposed Action could result in the loss of 21 or fewer antelope. Displacement of antelope would likely be increased in areas of concentrated development from that identified for the original Proposed Action; however, given that development in other parts of the project area would be reduced, displacement would take place within a smaller area than that defined for the original Proposed Action and Alternative A. Pronghorn mortality also would likely be less than for the original Proposed Action and Alternative A.

The majority of the revised Proposed Action would be outside of the designated mule deer winter/yearlong range. Therefore, little impact on population numbers would occur. However, as with the original Proposed Action and Alternative A, a small reduction in the area's ability to support deer is possible.

Since none of the project area has been classified as seasonal elk or moose range, there is no anticipated impact to these species from the revised Proposed Action.

Impacts to nongame and small mammals is expected to be less than that of the original Proposed Action and Alternative A, since total initial surface disturbance would be reduced and rare habitats would continue to be avoided.

4.11.1.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (1995c) would be required for the revised Proposed Action. Furthermore, the wildlife mitigation and protection measures identified in the wildlife mitigation and protection plan for this project (BLM and TRC Mariah Associates Inc. 1999) would be implemented.

4.11.1.3 Unavoidable Adverse Impacts

The unavoidable adverse LOP impacts anticipated from the implementation of the revised Proposed Action are the same as those for the original Proposed Action and Alternative A and include: 1) wildlife habitat loss; 2) an increase in the potential for vehicle-related wildlife injuries, stress, and harassment; and 3) the displacement of wildlife species from some habitats.

4.11.1.4 Cumulative Impacts

Some changes in cumulative impacts to pronghorn antelope from those identified in the original EIS are anticipated under the revised Proposed Action. Although the total surface disturbance associated with the revised Proposed Action would be less than that of the original Proposed Action and Alternative A (i.e., less direct loss of forage), displacement of animals may be greater in areas of concentrated development due to the increase from two wells per section to four wells per section. However, impacts are anticipated to be less than those identified for Alternative A. These effects are anticipated to create adverse short- and long-term indirect cumulative impacts to antelope; however, LOP indirect impacts from displacement are projected to subside as noise and human presence are reduced. Cumulative impacts to other big game (mule deer, elk, moose) and other nongame and

small mammals from the revised Proposed Action in combination with existing and reasonable foreseeable developments would remain insignificant.

4.11.2 Birds

4.11.2.1 Comparison of Impacts

As stated in the original EIS (BLM 1995a, 1995b), the principal threat to raptors from project activities is disturbance during nesting. Ground and aerial surveys of the project area in April 1994 indicated that nests were concentrated along the Big Sandy River. Since under the revised Proposed Action much of the development along the Big Sandy River has been eliminated, impacts to raptors would be reduced from those anticipated for the original Proposed Action and Alternative A.

No sage grouse leks are known to occur in the project area; therefore, no impacts to sage grouse leks are anticipated under the revised Proposed Action. Further, as with the original Proposed Action and Alternative A, less than 2.0-2.7% of potential sage grouse nesting habitat in the Unit would be disturbed, and since proposed developments would now primarily be concentrated in areas greater than 2.0 mi from known sage grouse leks, impacts are expected to be reduced and remain less than significant.

Impacts to nongame birds would be in direct proportion to the amount of a species' habitat removed. Impacts associated with the revised Proposed Action, therefore, are anticipated to be less than those of the original Proposed Action and Alternative A since the total area of disturbance is reduced.

4.11.2.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action. Surveys for raptor nests and nesting activities and sage grouse leks and nesting would still be required prior to implementation of surface-disturbing activities. Furthermore, the wildlife mitigation and protection measures identified in the wildlife mitigation and protection plan for this project (BLM and TRC Mariah Associates Inc. 1999) would be implemented.

4.11.2.3 Unavoidable Adverse Impacts

Unavoidable adverse LOP impacts under implementation of the revised Proposed Action include: 1) a loss of wildlife habitat; 2) an increase in the potential for vehicle-related wildlife injuries, stress, and harassment; and 3) the displacement of wildlife species from some habitats. These impacts are anticipated to be reduced from those of the original Proposed Action and Alternative A.

4.11.2.4 Cumulative Impacts

No changes in cumulative impacts to raptors, sage grouse, and nongame birds from those identified for the original Proposed Action and Alternative A are anticipated for the revised Proposed Action. Cumulative impacts to sage grouse have been reanalyzed in the Jonah Field II EIS (BLM 1997a, 1998).

4.11.3 Amphibians and Reptiles

4.11.3.1 Comparison of Impacts

Impacts to amphibians and reptiles are expected to be reduced under implementation of the revised Proposed Action since less surface disturbance would occur. Additionally, as with the original Proposed Action and Alternative A, rare habitats (e.g., wetlands, riparian areas) would be avoided.

4.11.3.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action. Furthermore, the wildlife mitigation and protection measures identified in the wildlife mitigation and protection plan for this project (BLM and TRC Mariah Associates Inc. 1999) would be implemented.

4.11.3.3 Unavoidable Adverse Impacts

Unavoidable adverse LOP impacts under implementation of the revised Proposed Action include: 1) a loss of wildlife habitat; 2) an increase in the potential for vehicle-related wildlife injuries, stress, and harassment; and 3) the displacement of wildlife species from some habitats. These impacts are anticipated to be reduced from those of the original Proposed Action and Alternative A.

4.11.3.4 Cumulative Impacts

No changes in cumulative impacts to amphibians and reptiles from those identified for the original Proposed Action and Alternative A are anticipated for the revised Proposed Action.

4.11.4 Fisheries

4.11.4.1 Comparison of Impacts

Potential impacts to fisheries are likely to be reduced under the revised Proposed Action from those described for the original Proposed Action and Alternative A. Furthermore, reduced development is anticipated proximal to the Big Sandy River. Implementation of proper erosion control measures, Stormwater Pollution Prevention Plans, and the avoidance of wetland/riparian areas would still occur under the revised Proposed Action.

4.11.4.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action. Furthermore, the wildlife mitigation and protection measures identified in the wildlife mitigation and protection plan for this project (BLM and TRC Mariah Associates Inc. 1999) would be implemented.

4.11.4.3 Unavoidable Adverse Impacts

Unavoidable adverse LOP impacts potentially occurring as a result of the revised Proposed Action are the same as those of the original Proposed Action and Alternative A (i.e., loss of fish habitat through surface water withdrawals and increased sedimentation, turbidity, and salinity in local drainages).

4.11.4.4 Cumulative Impacts

No changes in cumulative impacts to fisheries from those identified in the original EIS are anticipated for the revised Proposed Action. The avoidance of wetland and riparian areas will further decrease the likelihood of adverse cumulative impacts.

4.12 THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES

4.12.1 Comparison of Impacts

The original EIS (BLM 1995a, 1995b) indicated that the project was not likely to adversely affect bald eagles, peregrine falcons, black-footed ferrets, whooping cranes, mountain plover, ferruginous hawks, merlins, burrowing owl nests, loggerhead shrikes, long-billed curlew, or the silky pocket mouse. Many of the species have not been reported within the project area. Given that the revised Proposed Action has less initial and LOP surface disturbance than the original Proposed Action and Alternative A, it is therefore less likely to adversely affect these species.

4.12.2 Mitigation Measures

Most mitigation measures identified for the original Proposed Action and specified in the ROD would be unchanged for the revised Proposed Action. For example, surveys for black-footed ferret habitat or presence, bald eagle, and/or peregrine falcon would be required prior to disturbance. However, protocol for the avoidance of mountain plover has changed since the publication of the Stagecoach Draw EIS and would be implemented as described below.

Mountain plover habitats (e.g., cushion plant communities, playa lakes, areas with vegetation <4 inches in height) would be avoided, where practical, and where these habitats would be

disturbed, reclamation would utilize procedures designed to re-stabilize suitable plover habitat. Mountain plover surveys would be conducted within suitable plover habitat on the Stagecoach Draw Unit by a qualified biologist in accordance with U.S. Fish and Wildlife Service (USFWS) guidelines and as directed by the BLM. The survey procedures would include the following:

- Visual observation of areas within 656 ft (200 m) of proposed disturbance would be made from stationary vehicles and/or all-terrain vehicles to detect the presence of plovers. All plovers located would be observed long enough to determine if a nest is present.
 - Surveys would be conducted no more than 14 days prior to the date actual ground-disturbance activities begins. If two surveys are required, they would be made at least 14 days apart, with the last survey no more than 14 days prior to the start-up date.
 - Surveys would be required by the BLM to clear an action for mountain plovers prior to beginning a planned activity, and surveys would be conducted during the period of April 15-June 30 for development activities planned during this period.
 - If an active plover nest is found in the survey area, the planned activity would be delayed at least 37 days or 1 week post-hatching. If a brood of flightless chicks is observed, activities would be delayed at least 7 days.
 - Road construction and maintenance (i.e., grading) activities would be minimized from May 25 to June 30 in suitable mountain plover habitat.
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- Where practical, no new surface-disturbing activities would be conducted from April 1 to June 30 within 656 ft of identified mountain plover concentration areas (i.e., areas where broods and/or adults have been observed in the current year or documented in at least 2 of the past 3 years).
- Where access roads and/or well locations have been constructed prior to the mountain plover nesting season and use of these areas has not been initiated for development actions, the BLM would require site investigations of these areas prior to use to determine whether mountain plover are using these areas. In the event that mountain plover nesting is occurring, the BLM may require delays in planned activities until nesting is complete.

4.12.3 Unavoidable Adverse Impacts

No unavoidable adverse effects associated with the revised Proposed Action would occur to T&E, candidate, and state sensitive species.

4.12.4 Cumulative Impacts

No changes in cumulative impacts/adverse effects to T&E, candidate, and special status species from those identified in the original EIS are anticipated for the revised Proposed Action. The Jonah Field II EIS (BLM 1997, 1998) addresses the cumulative impacts/adverse effects for these species on areas that include the Stagecoach Draw Unit project area.

4.13 WILD HORSES

4.13.1 Comparison of Impacts

The original EIS-identified Proposed Action and Alternative A (BLM 1995a, 1995b) would have initially disturbed an estimated 705.8 acres and 983.9 acres, respectively, of wild horse range, representing approximately 0.07% and 0.10%, respectively, of the total acreage of the White Mountain Wild Horse Herd Management Area (WHHMA). The revised Proposed Action would initially disturb approximately 699.9 acres of the White Mountain WHHMA. Therefore, impacts to wild horses as a result of the revised Proposed Action would be reduced from those of the original Proposed Action and Alternative A.

4.13.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.13.3 Unavoidable Adverse Impacts

Unavoidable adverse LOP impacts to wild horses associated with the revised Proposed Action would be the same as those of the original Proposed Action and Alternative A and include: 1) a temporary loss of forage; 2) an increase in the potential for vehicle-related injury, stress, and mortality; and 3) the displacement of wild horses from some habitats.

4.13.4 Cumulative Impacts

No changes in cumulative impacts to wild horses from those identified in the original EIS are anticipated for the revised Proposed Action.

4.14 CULTURAL RESOURCES

4.14.1 Cumulation of Impacts

As with the original Proposed Action and Alternative A, potential direct and indirect impacts to NRHP-eligible cultural properties under the revised Proposed Action would primarily result from damage to or destruction of cultural properties caused by construction-related activities. Since there would be less initial surface disturbance associated with the revised Proposed Action, potential impacts generally would be less than those associated with the original Proposed Action and Alternative A. However, if development actions are concentrated in areas of high site density, potential impacts could be greater than those of the original Proposed Action, but would remain less than those of Alternative A. Illegal collection could take place due to increased human presence in the area under implementation of either the original Proposed Actions, Alternative A, or the revised Proposed Action.

4.14.2 Mitigation Measures

Mitigation measures identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would still be required for the revised Proposed Action. A survey of the Bryan-Green River-South Pass City Stage Road has been conducted (Johnson 1998), and mitigation for this NRHP-eligible site may or may not include a 0.25-mi avoidance zone on either side of the trail. Since the entire stage road is considered eligible and the potential field access road crosses the stage road, additional analysis and mitigation could be required by the BLM. Potential project disturbances within the 0.25-mi zone would be assessed for visual impacts to the trail on a case-by-case basis by the BLM.

4.14.3 Unavoidable Adverse Impacts

Unavoidable adverse cultural resource impacts would remain unchanged under the implementation of the revised Proposed Action, and these impacts include the inadvertent disturbance of buried cultural resource features and illegal collection of cultural resource materials due to increased human presence in the area.

4.14.4 Cumulative Impacts

No changes to cumulative cultural resource impacts from those identified in the original EIS are anticipated for the revised Proposed Action. The revised Proposed Action would adhere to the stipulation of a 0.25-mi avoidance of historic trails within the Unit. However, an increased well spacing to four wells per section may increase the cumulative impacts to the viewshed of the trails.

4.15 SOCIOECONOMICS

4.15.1 Comparison of Impacts

The original EIS (BLM 1995a, 1995b) indicated that: 1) population changes in Sweetwater County would be negligible and of relatively short duration; 2) there would be a beneficial effect on local employment and local economies throughout the LOP; 3) any adverse socioeconomic effect caused by concentrations of workers in a small town would be negligible and short-term; 4) local communities would experience beneficial economic impacts through an increase in consumption of local goods and services; and 5) the project would generate substantial revenues for the state, county, and local governments, as well as area school districts. The beneficial and adverse socioeconomic impacts associated with the revised Proposed Action would be of the same type as those of the original Proposed Action and Alternative A. However, due to the reduced number of wells, employment estimates

may be reduced and, based on the current price of natural gas, anticipated revenues also are likely to be reduced.

4.15.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.15.3 Unavoidable Adverse Impacts

Neither the original Proposed Action, Alternative A, nor the revised Proposed Action would result in any unavoidable adverse socioeconomic impacts.

4.15.4 Cumulative Impacts

No changes in cumulative impacts to socioeconomics from those identified in the original EIS are anticipated for the revised Proposed Action.

4.16 LAND STATUS/USE

4.16.1 Continuation of Impacts

As with the original Proposed Action and Alternative A (BLM 1995a, 1995b), the revised Proposed Action would result in no change in surface ownership nor would there be any change in designated land uses.

4.16.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.16.3 Unavoidable Adverse Impacts

As with the original Proposed Action and Alternative A, there would be no unavoidable adverse impacts to land status/use under the implementation of the revised Proposed Action.

4.16.4 Cumulative Impacts

No changes in cumulative impacts to land status/use from those identified in the original EIS are anticipated for the revised Proposed Action.

4.17 RECREATION

4.17.1 Cumulation of Impacts

No major existing developed recreation sites or facilities exist; therefore, none would be affected by either the original or revised Proposed Action. However, there may be some long-term displacement or elimination of existing dispersed recreation (e.g., hunting, trail visitors) due to the presence of gas field development activities and this impact may be greater on areas with concentrated development (i.e., four well locations/section). Overall, impacts to recreation associated with the revised Proposed Action would be the same as those of the original Proposed Action and reduced from those of Alternative A.

4.17.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.17.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts to recreation would be unchanged from those of the original Proposed Action and Alternative A and primarily would be due to the avoidance of gas field facilities by hunters and other recreationists.

4.17.4 Cumulative Impacts

Under the revised Proposed Action, cumulative impacts to recreation would remain unchanged from those identified in the original EIS (BLM 1995a, 1995b).

4.18 LIVESTOCK/GRAZING MANAGEMENT

4.18.1 Comparison of Impacts

The original Proposed Action and Alternative A (BLM 1995a, 1995b) would have resulted in the initial loss of approximately 31 animal unit months (AUMs) and 47 AUMs in the Highway-Gannon Allotment, 4 AUMs and 5 AUMs in the Big Sandy Allotment, and 2 AUMs (both alternatives) in the 18-mile Allotment, respectively. These impacts would remain insignificant under the revised Proposed Action since there would be less initial and LOP surface disturbance. Beneficial impacts may occur where reclaimed areas provide greater livestock forage than undisturbed areas.

4.18.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.18.3 Unavoidable Adverse Impacts

There would be a loss of AUMs under the original Proposed Action, Alternative A, and revised Proposed Action.

4.18.4 Cumulative Impacts

Under the revised Proposed Action, cumulative impacts to livestock/grazing management would remain unchanged from those identified in the original EIS (BLM 1995a, 1995b).

4.19 TRANSPORTATION

4.19.1 Comparison of Impacts

The original Proposed Action and Alternative A (BLM 1995a, 1995b) assumed: 1) eight wells would be drilled in a year, which would result in negligible impacts to traffic on existing state and U.S. highways to the Unit and 2) an increase in travel on access roads to the Unit could have moderate impacts during construction and drilling and negligible impacts for the LOP. While there would likely be some increase in traffic in areas of concentrated development, continued road improvement and maintenance actions by Teraco on project-required roads would minimize the potential for road failure and ensure no long-term impacts. Impacts resulting from the revised Proposed Action would be unchanged (i.e., less than significant).

4.19.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b), ROD (BLM 1995c), and Transportation Plan (UELS and Texaco 1997) would be required for the revised Proposed Action. New and existing approaches to state highways would require Wyoming Department of Transportation access permits.

4.19.3 Unavoidable Adverse Impacts

As with the original Proposed Action and Alternative A, unavoidable adverse impacts associated with the revised Proposed Action would include increased traffic within the project area.

4.19.4 Cumulative Impacts

No changes in cumulative impacts to transportation from those identified in the original EIS are anticipated for the revised Proposed Action.

4.20 VISUAL RESOURCES

4.20.1 Comparison of Impacts

As with the original Proposed Action and Alternative A (BLM 1995a, 1995b), the revised Proposed Action would be located in Visual Resource Management (VRM) Class IV areas. Well locations for the revised Proposed Action would be on a 160-acre spacing pattern in some areas, allowing for the probable viewing of several wells simultaneously. This would represent a change in landscape character; however, with the implementation of mitigation measures as outlined in Section 4.17.5 of the original EIS (BLM 1995a, 1995b) and authorized in the ROD (BLM 1995c), the revised Proposed Action would not significantly

impact visual resources for the LOP. None of the wells would be located within the 0.25-mi buffer zone of the Oregon Trail and the Bryan-Green River-South Pass City Stage Road.

4.20.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (1995c) would be required for the revised Proposed Action.

4.20.3 Unavoidable Adverse Impacts

As with the original Proposed Action and Alternative A, the addition of gas production facilities and associated ROWs would be an unavoidable adverse visual resource impact for the revised Proposed Action. With implementation of applicant-committed practices and mitigation measures, these impacts would gradually dissipate as revegetation occurs following reclamation and field abandonment.

4.20.4 Cumulative Impacts

No changes in cumulative impacts to visual resources from those identified in the original EIS are anticipated for the revised Proposed Action.

4.21 HAZARDOUS MATERIALS

4.21.1 Comparison of Impacts

Impacts to soils, surface and ground water resources, and wildlife could result from accidental hazardous material spills, pipeline ruptures, and/or exposure to potentially hazardous materials. Since project operations under the initial Proposed Action, Alternative A, or the revised Proposed Action would comply with all relevant federal and

state laws regarding hazardous materials and with directives identified in the Hazardous Materials Management Plan for this project and existing Spill Prevention, Control, and Countermeasure (SPCC) Plans, impacts are expected to be less than significant.

4.21.2 Mitigation Measures

No additional mitigation measures beyond those identified in the original EIS (BLM 1995a, 1995b) and ROD (BLM 1995c) would be required for the revised Proposed Action.

4.21.3 Unavoidable Adverse Impacts

No unavoidable adverse impacts are anticipated with the implementation of the revised Proposed Action.

4.21.4 Cumulative Impacts

Under the revised Proposed Action, cumulative impacts associated with hazardous materials would remain unchanged from those identified in the original EIS (BLM 1995a, 1995b).

4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the revised Proposed Action would have the same irreversible and irretrievable impacts as those identified in the original EIS (BLM 1995a, 1995b) with the primary commitment of resources resulting from the removal and use of the gas and oil reserves. Other irreversible and irretrievable commitments of resources listed in the original EIS also would occur under the revised Proposed Action. However, given fewer wells would be drilled and less initial surface disturbance would occur, the magnitude of these impacts would be reduced.

4.23 SHORT-TERM USE OF THE ENVIRONMENT VS. LONG-TERM PRODUCTIVITY

No changes from those identified in the original EIS (BLM 1995a, 1995b) would occur in the short-term use of the environment and its affect on the long-term productivity of the project area or adjacent areas under implementation of the revised Proposed Action.

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